

NEW INFORMATION ON THE NEW WORLD *PHYSOCEPHALA* (DIPTERA: CONOPIDAE)¹

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ABSTRACT: Examination of some types and additional material has resulted in some new synonymy. One new name is proposed: *P. wulpi* for *P. testacea*, which is preoccupied. Two new species are described: *P. bennetti* from Trinidad and *P. sabroskyi* from the Bahamas. A new key to species is presented.

Accumulation of material since my 1957 paper, reveals a large amount of variation in many species, as well as the frequent occurrence of intermediates. Intermediates are to be expected if we accept evolution; and some of these may be hybrids. This paper should be considered within context of my earlier paper (1957) in order to avoid a considerable amount of duplication.

Physocephala soror Kröber

Physocephala soror Kröber (1915a:143).

Remarks.— Several specimens have now been seen including a syntype (USNM). This species is similar to *P. inhabilis* Walker and *P. bipunctata* (Macquart). It should not be confused with *Conops soror* Kröber (1915b: 131) which is a synonym of *Physocephala inhabilis* (Walker) (1849:672).

Physocephala sororcula Williston

Physocephala sororcula Williston (1892: 83).

Remarks.— This species was previously considered a synonym of *P. furcillata* (Williston). Williston did not describe the halter which has black on the knob. A syntype (BMNH) was studied.

Physocephala marginata (Say)

Remarks.— Specimens have now been seen from Mexico, including typically dark specimens from Quintana Roo and Sinaloa (EMUS). There are intermediates toward *P. inhabilis* (Walker), a species that is also typically very dark, but has a very distinct wide pleural pollinose stripe. Intermediates also occur with *P. sagittaria* (Say) and *P. texana* (Williston).

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Physocephala sagittaria (Say)

Remarks.— Specimens have now been seen from Mexico. These are not as dark as northern USA specimens and are probably a southern cline (*P. castanoptera* Loew). Specimens have been found with a small hyaline area in the discal cell of one wing, and the discal cell of the other wing entirely dark. These have been seen from Alpine, Texas; Las Cruces, New Mexico; and San Rafael, Vera Cruz.

Reexamination of the holotype of *Conops dimidiata* Walker (BMNH) again confirms the synonymy with *P. sagittaria* (Say).

Physocephala wulpi, NEW NAME

Conops testaceus Wulp (1883: 13).

Remarks.— This name is preoccupied by *Conops testaceus* Macquart (1843, 9); India: Bengal and Pondichery. Typically this species is very rufous with no black on the mesonotum. Intermediates with *P. cayennensis* (Macquart) occur. The holotype of *C. testaceus* Wulp (ZMAN) was examined.

Physocephala cayennensis (Macquart)

Remarks. — There is a male specimen in (MNHN), #1711, not labelled as the type but apparently the specimen considered as the holotype by Séguy (Camras, 1957: 215). This species typically is very dark with black on the mesonotum.

Study of the holotype of *Conops piciventris* Wulp (ZMAN) confirms its conspecificity and synonymy with this species.

Physocephala bennetti, NEW SPECIES

Head: Frons black, extending through the face to the black cheek. Vertex yellowish brown. Frontal orbital margin brown and narrow, becoming wider and yellow at the facial orbital margin. Facial keel black becoming wider below; distinct from the yellow facial grooves. Occiput black, narrow orbital margin yellow pollinose, extending into the cheek. Antenna and arista black, dark brown ventrally at first flagellomere. Process of second arisal segment flat and wide, nearly as long as the third arisal segment. Scape about 3x as long as wide. Pedicel 3 1/2 x as long as scape. First flagellomere 1 1/2x length of scape.

Thorax: Dark brown with indistinct dark stripes on dorsum, and indistinct light yellow pollinose areas. Similar pollinose pleural stripe which is more distinct below. Legs dark brown with indistinct black ring near base of metafemur. Yellow pollinose areas on coxae and femora. Wing black anteriorly to fifth vein. Hyaline apically in discal cell and in a small area of first posterior cell. Halter yellow.

Abdomen: Dark brown, first tergite black. Black dorsally on second tergite with yellow pollinose margin at base and apex. Light yellow pollinose on apical tergites. Theca of moderate (average) length. Length 23 mm.

Type material.— HOLOTYPE ♀: Trinidad: Curipe, June 1965, F.D. Bennett. Dead bee, *Xylocopa submordax*, found May 12. Emerged June 11, (CNC). PARATYPES: ♀, (Trinidad): Coll. Balandra, April 17, 1965, F.D. Bennett. Ex. *Xylocopa frontalis* -on ground below nest (CNC). Similar to holotype. Dark ring of metafemur distinct. ♀, (Trinidad): Aug. 1964. Ex. dead *Xylocopa submordax*. Pupal case on pin. (CNC). Similar to holotype but some yellow on lower face. ♀, (Trinidad): Curepa, July 1965, F.D. Bennett. Ex. adult of *Xylocopa submordax* (CNC). Similar to holotype but some yellow on face extending narrowly up on the frons, somewhat teneral.

Remarks.— This species is related to *P. cayennensis* (Macquart) having the black facial keel and yellow halter. It keys to *P. sericeus* (Olivier) in the 1957 key, but does not agree with Olivier's description.

Physocephala sabroskyi, NEW SPECIES

Head: Frons and face including grooves yellow. Narrow "T" pattern on frons, cheek and occiput black. Vertex brown. Antenna rufous, darker on pedicel mainly due to the black hairs. Pedicel 2.5x length of the scape, the first flagellomere a little longer than the scape. Proboscis black, rufous at base, 1.5x length of head.

Thorax: Black. Scutellum, humerus, and adjacent margins brown. Distinct gold pollinose pleural stripe connected to gold pollinose on humerus and adjacent areas. Gold pollinose on scutellum, adjacent mesonotum and upper margin of postnotum. Legs rufous with gold pollinose areas, black on coxae, claws and pulvillae. Halter yellow, black at base. Wing pattern rufous, extending to fifth vein, paler in costar cell. Black apically at first posterior cell (R_5) and submarginal cell (R_3). Discal cell hyaline in apical half.

Abdomen: Black, most of second tergite, base and apex of third tergite, and genitalia rufous. Gold pollinose apically on all the segments.

Length: 11 mm.

Type material.— HOLOTYPE ♂: Bahamas: Andros, 5 mi. S. Pt. Simon, W. Coast, 18 Mch., O.L. Cartwright. Smithsonian-H.J. Bowen Expedition, Andros I., Bahamas. 1966 (USNM).

Remarks.— This very distinctive species is easily recognized by the rufous wing pattern with black apically. Although the only other species in this genus with such a wing are from Argentina and Chile, this pattern is found in several West Indian *Physoconops*.

Etymology.— This species is named in honor of Dr. Curtis W. Sabrosky, in appreciation of all his help during my earlier work on Conopidae.

Physocephala venusta Parsons

Remarks.— Originally described from one female from Haiti, I have now examined a male and a female from the Dominican Republic: Cabo Rojo, km. 25 Alcoa Road, dry premontane forest, 18.I.1989, S.A. Marshall (DEBU). The male is similar to the female, the abdomen beyond the second tergite being mainly dark rufous. The black cheek is yellow in the center. The entirely dark discal cell suggests affinity to *P. sagittaria*.

Physocephala aurifrons (Walker)

Conops flavifrons Walker (1849: 672) [preoccupied by *Conops flavifrons* Meigen, 1824].

Conops aurifrons Walker (1849: 1158) [replacement name].

Physocephala vespiformis Kröber (1915a: 135). [new synonymy].

Physocephala brasiliensis Kröber (1915a: 136). [new synonymy].

The holotype of *P. aurifrons* (BMNH) was examined. It is a female from Pará, Brazil. The name *C. aurifrons* was given under "errata" to replace *C. flavifrons* but no reason was given. Presumably it was because *C. flavifrons* was preoccupied.

The type agrees with Walker's description except that when he described "front of head yellow" he was referring only to the face. The frons of this species is black.

The position of *P. flavifrons* in the 1957 key was based on a misidentified specimen from N. Luzon (BMNH).

The holotype of *P. vespiformis* (ZMHB) was examined, and R. Contreras-Lichtenberg sent a drawing of the wing of the holotype of *P. brasiliensis* showing that the wing pattern extends through the fifth vein, thus filling the second basal cell. The discal cell is hyaline apically.

The male of this species differs from the male of *P. lugubris* (formerly *P. nigrifacies*) as follows: the apex of the abdomen is more acutely pointed; the halter is yellow with black on knob; the facial grooves are mainly yellow in distinct contrast to the black face; the head is more rounded, and the size is usually larger. The female differs additionally by having the face yellow. The only males examined are two from Trinidad (CNC), one of which has the face entirely black and in the other it is partly yellow.

Physocephala carbonaria (Bigot)

Conops carbonarius Bigot (1887: 42).

Remarks. — This species is very similar to *P. aurifrons* but is more shiny, less pollinose. The male abdomen is rounded, thus differentiating *P. aurifrons* and *P. lugubris*. This species was previously considered to be a synonym of *P. nigrifacies* (Bigot). The two syntypes of *P. carbonaria* (male and female) and Williston's specimens (1892: 81) are all from Mexico (BMNH) and were examined for this study. A male and female from Costa Rica (CMNH) were also studied.

Physocephala thecala Camras

Remarks. — Originally described from a single female from Santa Catarina, Brazil. There are four males from Argentina (Tucumán and Catamarca,

USNM) that are referred here. They are less robust than the type female but this may be due to geographical variation. The male abdomen is similar to *P. unicolor* Kröber but there are no posterior pollinose margins on the tergites. The apex of the abdomen of these males is bluntly pointed (as in *P. unicolor*) in two specimens; but in two this structure is rounded. This difference in the shape of the apex of the abdomen is unusual within a species, and shows that any character can be variable.

Physocephala nervosa Kröber

Physocephala nervosa Kröber (1915a: 145)

Physocephala pulchripennis Kröber (1927:132) [new synonymy].

Remarks.— The difference in wing pattern in the keys is not correct. In the original description of *P. pulchripennis*, the wing pattern is black apically.

Physocephala bicolor Kröber

Remarks.— The yellow faced female is now considered normal for this species as in the case of *P. aurifrons* and *P. carbonaria*. In all the other species examined the face is similar in both sexes. The head is missing in the female from Chapada in the USNM.

Physocephala picipes Kröber

Remarks.— The holotype female (NHMW) was studied. I have for comparison one female in my collection (ex. Pearson Collection) and one female from the BMNH, both from Nova Teutonia, Brazil. The type has some foreign material on the frons making it difficult to see the pattern but it seems to have a large dark "T" pattern. The specimen from the BMNH has yellow above the antenna this showing considerable variation in the color of the frons. My specimen, which is similar to the holotype, has more black on the frons with some yellow from the face extending onto the frons. Laterally black from the frons extends down to the face. The first flagellomere is relatively long and as a result the curvature resembling that of a *Tabanas* inverted is present, as described by Kröber. This curvature is the result of retraction of the soft underside, and occurs in other species; but because the first flagellomere is short in the other species it is not as conspicuous.

The arista and the sixth tergite are distinctive and characteristic of this species. The apical segment of the arista is cylindrical and blunt at the apex. In other species including the very similar *P. unicolor* it tapers and is pointed at the tip. The sixth tergite is relatively narrow (short), almost half the usual length. The halter, which is yellow, has a black mark at the junction of the knob and the stem.

Physocephala unicolor Kröber

Physocephala unicolor Kröber (1915a: 145).

Physocephala fairchildi Camras (1957: 216) [new synonymy].

Remarks. — The holotype of *P. unicolor* (ZMHB) was studied. In some views there is much more yellow on the halter than described. The abdomen has some dermestid damage and distortion so that it resembles a female, but it is a male. The apical tergite is bluntly pointed, about as long as wide.

There are two additional specimens from Entre Rios, Argentina (BMNH).

Physocephala lugubris (Macquart)

Conops lugubris Macquart (1835: 26).

Conops nigrifacies Bigot (1887: 40) [new synonymy].

Remarks.— Examination of the holotype (MNHN, #1715), reveals this synonymy. This could hardly be determined from the brief original description. This is not the same as the species described by Macquart (1843: 16) with the name *Conops lugubris*, which is a synonym of *P. tibialis* Say. That holotype, according to Kröber (1939: 541) is in the BMNH.

There is a male specimen (MNHN, #1712) under the name *P. lugubris*, not labeled as the type, which agrees with *P. tibialis*.

Physocephala ephippium (Macquart)

Conops ephippium Macquart (1843: 11).

Remarks.— Described from “Amerique meridionale.” There are three specimens (MNHN, #527), as originally recorded but the locality is marked as Egypt. They agree with the original description but I believe they are *P. antiqua* (Wiedemann) which occurs in Egypt.

The first posterior cell is abruptly black on the basal half and the first basal cell is hyaline. This pattern is common in Old World species but has not been seen in any species from the New World.

Physocephala flaviceps (Macquart)

Conops flaviceps Macquart (1843: 15).

Remarks.— Described from “De l’Amerique septentrionale.” The holotype was in Macquart’s personal collection (Lille, France), and Matile believes that it no longer exists. From the description the wing band terminates abruptly (at the second vein). It would therefore be an Old World species, whether or not there was black in the first posterior cell.

Physocephala punctum (Bigot)

Conops punctum Bigot (1887: 45).

Physocephala punctum (Bigot) [Camras (1957: 217)].

Remarks.— One male and two females (BMNH) not labelled as types. The first posterior cell is black on the basal half and the first basal cell is hyaline. This is an Old World species. See note under *P. ephippium*.

Key to the New World *Physocephala*

1	Frons mainly or entirely dark	2
1'	Frons mainly or entirely pale	15
2	Face black, continuous with black frons and cheek	3
2'	Face yellow or reddish, or partly black	8
3	Head thin, nearly half as long as high. Facial grooves partly dark. Male abdomen pointed	4
3'	Head normal, much more than half as long as high. Facial grooves mainly pale. Male abdomen rounded or pointed	5
4	Halter black. Coxae mainly black	<i>P. lugubris</i>
4'	Halter black and yellow. Coxae dark yellow	<i>P. brunripes</i>
5	Thorax rufous (male)	<i>P. bicolor</i>
5'	Thorax dark	6
6	Thorax partly brown, facial keel black	<i>P. bennetti</i>
6'	Thorax black, facial keel yellow (male)	7
7	Apex of abdomen rounded	<i>P. carbonaria</i>
7'	Apex of abdomen pointed	<i>P. aurifrons</i>
8	Discal cell entirely dark. Thorax mainly reddish	<i>P. floridana</i>
8'	Discal cell partly hyaline. Thorax black or rufous	9
9	Face partly black	10
9'	Face entirely yellow or rufous	12
10	Halter yellow with black mark at base of knob. Sixth tergite of female very short	<i>P. picipes</i>
10'	Halter black and yellow. Sixth tergite of female normal	11
11	Facial keel black	<i>P. bennetti</i>
11'	Facial keel yellow (males)	<i>P. aurifrons</i>
12	Cheek reddish, same as face	<i>P. spheniformis</i>
12'	Cheek black	13
13	Thorax rufous (female)	<i>P. bicolor</i>
13'	Thorax black	14
14	Abdomen shiny, less pollinose. Sixth tergite relatively short (female)	<i>P. carbonaria</i>
14'	Abdomen relatively dull, more pollinose. Sixth tergite relatively long	<i>P. aurifrons</i>
15	Cheek uniformly dark	16
15'	Cheek paler in middle	29
16	Wing pattern mainly rufous, dark apically	17
16'	Wing pattern dark, may be pale at base	19
17	Facial keel black. Halter black at knob	<i>P. nervosa</i>
17'	Facial keel yellow. Halter yellow	18
18	No pollinose pleural stripe	<i>P. segethi</i>
18'	Distinct gold pollinose pleural stripe	<i>P. sabroskyi</i>
19	Halter partly black	20
19'	Halter yellow except at base	24
20	Facial keel black	21
20'	Facial keel yellow	22

21	Face mainly black. Halter with small black area at junction of knob and stem	<i>P. picipes</i>
21'	Face yellow. Halter black on knob and on part of stem	<i>P. unicolor</i>
22	Mainly rufous species (females)	<i>P. bicolor</i>
22'	Mainly black species	23
23	Tergites with pollinose apical margins. Theca short	<i>P. sorocula</i>
23'	Tergites without pollinose apical margins. Theca very long	<i>P. thecala</i>
24	Facial grooves black. Discal cell dark	25
24'	Facial grooves pale. Discal cell mainly hyaline	26
25	Black "T" of frons wide. Thorax partly reddish (SE USA)	<i>P. floridana</i>
25'	Black "T" of frons narrow. Thorax black (E N.Am.)	<i>P. tibialis</i>
26	Facial keel black. Dark species	<i>P. cayennensis</i>
26'	Facial keel yellow	27
27	Cheeks black. Dark species (N.Am., Mex.)	<i>P. furcillata</i>
27'	Cheeks reddish. Rufous species	28
28	Scape 3-4x as long as wide. Rufous species (N.Am., Mex.)	<i>P. texana</i>
28'	Scape 2x as long as wide. Reddish species (N.Am.)	<i>P. burgessi</i>
29	Knob of halter black or dark brown	30
29'	Knob of halter yellow, may be pale rufous or brownish	31
30	Rufous species. No pleural stripe	<i>P. rufithorax</i>
30'	Dark species. Pollinose pleural stripe	<i>P. bipunctata</i>
31	Facial grooves dark	32
31'	Facial grooves pale	34
32	Discal cell entirely dark (N.Am., Mex.)	<i>P. sagittaria</i>
32'	Discal cell mainly hyaline	33
33	Pollinose pleural stripe distinct and wide above	<i>P. inhabilis</i>
33'	Pollinose pleural stripe less distinct, narrow above (N.Am., Mex.)	<i>P. marginata</i>
34	Facial keel dark	35
34'	Facial keel pale	36
35	Mesonotum entirely or mainly rufous	<i>P. wulpi</i>
35'	Mesonotum entirely or mainly black	<i>P. cayennensis</i>
36	Mainly blackish species	37
36'	Mainly reddish or brownish species	38
37	Abdomen black	<i>P. inhabilis</i>
37'	Abdomen dark reddish apically	<i>P. venusta</i>
38	Rufous species. Black on mesonotum distinct (N.Am., Mex.)	<i>P. texana</i>
38'	Brownish species with diffuse black areas on mesonotum	<i>P. soror</i>

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